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The impact of the implementation of preeclampsia screening in the first trimester

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Objective

After the publication of the ASPRE clinical trial and afterwards other clinical trials and meta-analyses, is known that the administration of 150 mg of acetylsalicylic acid (ASA) to pregnant women selected as being at high risk of preterm preeclampsia (PE) reduces the probability of suffering the disease in the preterm stage by up to 60%), and all scientific societies, including the Spanish Society of Gynecology and Obstetrics, consider that PE screening in the first trimester is justified. At the University Hospital of San Juan de Alicante (HUSJ) a prevention strategy for PE and its repercussions was introduced in December 2020, that is based on the detection of high-risk cases through combined population screening based on a multivariate model in the first trimester, together with ASA treatment and close follow-up of classified pregnant women as at high risk. The objective of this work was to verify wether the implementation of a population screening strategy in the first trimester for estimation of the risk of PE, together with the administration of 150 mg of ASA daily and closer monitoring for pregnant women classified as high risk, reduces the incidence and/or severity of PE, and its maternal and fetal repercussions in our environment.

Methods

This is a single-center, observational, retrospective, comparative analytical study of two samples separated by time: pregnant women treated for preeclampsia at our hospital on dates two years before and after the implementation of our screening + treatment strategy. - Group 1: before to strategy implementation: 1/1/2019-12/31/2020, the closest period prior to strategy implementation. - Group 2: after strategy implementation 4/1/2021-3/31/2023. Patients who have completed their pregnancy 20 weeks after the implementation of the strategy and therefore the first screened pregnant women have already been able to develop PE or not.

Results

Our findings showed a decrease in the total incidence of PE from 4.4% in period 1 to 1.6% in period 2. Regarding the variables to be analyzed for PE cases attended, we found that the rate of normal delivery has increased (30.6 to 41.9%) and the rate of cesarean section has decreased (61.2 to 51.6%). In addition, also were lower the rate of premature births (53.148.4%), the need for admission to the maternal ICUs (36.7%-29%) and complicated pregnancies with IUGR (40.8%-22. 6%), but all differences without statistically significant value, maybe due to the samples size.

Conclusion

We have corroborated a notable decrease in the incidence of PE in our setting after the implementation of the strategy. And a clear trend towards a reduction in severity and both maternal and fetal repercussions, non-statistically significant probably due to the small size. All that confirms the performance of the strategy in our clinical setting.

Baseline characteristics of the patients				
	Mean ± SD on(%)			
	TOTAL (n=80)	GROUP 1 (n=49)	GROUP 2 (n=31)	p-value
Patient age	31.79, SD 6.45	32.06, SD 5.91	31.35, SD 7.31	0.63
Obesity				0.25
- Yes	19 (23.8%)	13 (26.5%)	6 (19.4%)	
- No	51 (63.8%)	28 (57.1%)	23 (74.2%)	
- Unknown	10 (20.5%)	8 (16.3%)	2 (6.5%)	
Parity				0.82
- Primipara	53 (66.3%)	32 (65.3%)	21 (67.7%)	
- Multiparous	27 (33.8%)	17 (34.7%)	10 (32.3%)	
Twin				0.49
- Yes	8 (10%)	4 (8.2%)	4 (12.9%)	
- No	72 (90%)	45 (91.8%)	27 (87.1%)	
Tobacco				0.56
- Yes	6 (7.5%)	3 (6.1%)	3 (9.7%)	
- No	74 (92.5%)	46 (93.9%)	28 (90.3%)	
Personal history PE				0.48
- Yes	5 (6.3%)	4 (8.2%)	1 (3.2%)	
- No	74 (92.5%)	44 (89.8%)	30 (96.8%)	
- Unknown	1 (1.3%)	1 (2%)	0	
Chronic hypertension				0.60
- Yes	7 (8.8%)	5 (10.2%)	2 (6.5%)	
- No	72 (90%)	43 (87.8%)	29 (93.5%)	
- Unknown	1 (1.3%)	1 (2%)	0	
Diabetes				0.66
- No	72 (90%)	44 (89.8%)	28 (90.3%)	
- Gestational diabetes	6 (7.5%)	3 (6.1%)	3 (9.7%)	
- T1DM	1 (1.3%)	1 (2%)	0	
- T2DM	0	0 (0%)	0	
- Unknown	1 (1.3%)	1 (2%)	0	

Result variables according to each group				
	Mean ± SD, median (IQR) or (%)			
	TOTAL (n=80)	**GROUP 1 (n=49)**	**GROUP 2 (n=31)**	**p-value**
PE incidence		**4.40%** (total 1909)	**1.60%** (total 1941)	0.157
Incidence PE Preterm				0.935
- Yes	46 (57.5%)	28 (57.1%)	18 (58.1%)	
- No	34 (42.5%)	21 (42.9%)	13 (41.13%)	
PE risk:				
- High risk	9 (11.3%)		9 (29%)	
- Low risk	9 (11.3%)		9 (29%)	
- Not calculated	62 (77.4%)	49 (100%)	13 (41.9%)	
Gestational age at diagnosis of PE				0.584
- Not premature	31 (38.8%)	18 (36.7%)	13 (41.9%)	
- Mild: 34-36+6s	21 (26.3%)	14 (28.6%)	7 (22.6%)	
- Moderate: 32-33+6s	9 (11.3%)	4 (8.2%)	5 (16.1%)	
- Severe: 28-31+6s	16 (20%)	**11 (22.4%)**	**5 (16.1%)**	
- Extreme: before 28s	1 (1.3%)	0	1 (3.2%)	
- Puerperal	1 (1.3%)	1 (2%)	0	
- Unknown	1 (1.3%)	1 (2%)	0	
Degree of prematurity				0.962
- Not premature	39 (48.8%)	**23 (46.9%)**	**16 (51.6%)**	
- Mild: 34-36+6	20 (25%)	13 (26.5%)	7 (22.6%)	
- Moderate: 32-33+6	6 (7.5%)	4 (8.2%)	2 (6.5%)	
- Severe: 28-31+6	15 (18.8%)	9 (18.4%)	6 (19.4%)	
- Extreme: before 28	0 (0%)	0 (0%)	0 (0%)	
Days elapsed from diagnosis to termination of pregnancy	6.86, SD 7.23	6.59, SD 5.61	7.29, SD 9.33	0.513
- 0-7	57	35	22	
- 8-14	14	9	5	
- 15-21	6	5	1	
- 21-28	1	0	1	
- >28	2	0	2	
Days elapsed from completion to hospital discharge	4.29, SD 2.34	4.04 , SD 2.07	4.68, SD 2.71	0.323
- 0-7	74	46	28	
- 8-14	5	3	2	
- 15-21	1	0	1	
- 22-28	0	0	0	
- >28	0	0	0	
- Puerperal	1	0	0	
Total days of hospitalization	8.41, SD 7.20	7.57, SD 5.6	9.74, SD 9.14	0.356
- 0-7	49	30	19	
- 8-14	21	15	6	
- 15-21	6	2	4	
- 22-28	2	2	0	
- >28	2	0	2	
Start mode end of pregnancy				0.226
- Spontaneous	4 (5%)	3 (6.1%)	1 (3.2%)	
- Mad-Ind	13 (16.3%)	9 (18.4%)	4 (12.9%)	
- Induction	30 (37.5%)	14 (28.6%)	16 (51.6%)	
- Caesarean section	33 (41.3%)	**23 (46.9%)**	**10 (32.3%)**	
Mode of termination of pregnancy				0.584
- Eutocic	28 (35%)	**15 (30.6%)**	**13 (41.9%)**	
- Instrumental	6 (7.5%)	4 (8.2%)	2 (6.5%)	
- Caesarean section	46 (57.5%)	**30 (61.2%)**	**16 (51.6%)**	
Need for maternal ICUs				0.478
- Yes	27 (33.8%)	**18 (36.7%)**	**9 (29%)**	
- No	53 (66.3%)	31 (63.3%)	22 (71%)	
IURG fetus				0.093
- Yes	27 (33.8%)	**20 (40.8%)**	**7 (22.6%)**	
- No	53 (66.3%)	29 (59.2%)	24 (77.4%)	
Eclampsia				-
- Yes	0 (0%)	0 (0%)	0 (0%)	
- No	80 (100%)	49 (100%)	31 (100%)	
Placental abruption				-
- Yes	0 (0%)	0 (0%)	0 (0%)	
- No	80 (100%)	49 (100%)	31 (100%)	